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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,755	02/21/2006	Stefan Boehm	03100282AA	6657
30743 7590 07/08/2009 WHITHAM, CURTIS & CHRISTOFFERSON & COOK, P.C. 11491 SUNSET HILLS ROAD SUITE 340 RESTON, VA 20190				
EXAMINER MCNALLY, DANIEL				
ART UNIT		PAPER NUMBER		
1791				
MAIL DATE		DELIVERY MODE		
07/08/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/568,755

Applicant(s)

BOEHM ET AL.

Examiner

DANIEL MCNALLY

Art Unit

1791

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4, 14-16, 19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 14-16, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/15/2009 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art [previously cited, herein "APA"] in view of Magnin et al. [US2004/0265504, of record, previously cited, herein "Magnin"].

APA found in the applicant's specification on page 1 discloses a microsystem comprising a microcomponent glued to a substrate. Claim 19 is directed toward the product, and all of the processing steps described in the claim do not necessarily limit the product. Claim 19 appears to require the microcomponent is joined to the substrate by a hotmelt adhesive located at selective bond sites rather than an adhesive spread over the entire surface of the substrate. The APA suggest using viscous hotmelt adhesives were known in the joining of microcomponents (page 1, line 11-page 2, line

30). The APA also discloses using a viscous adhesive and is silent as to using adhesive located at selective bond sites (page 1, lines 11-21).

Magnin discloses a method of bonding substrates using a powder adhesive. Magnin discloses the disadvantages of using liquid adhesives when compared to powder adhesives, such as the extra time and energy required to dry the liquid adhesive on the substrates (paragraph 0003). The method comprises providing two substrates to be bonded, providing a powder adhesive, depositing the powder onto one of the substrates, activating the adhesive with heat, contacting the substrates together with the adhesive there between, and curing the adhesive (paragraphs 0013-0023). Magnin discloses the powder is applied to the entire surface or a pattern on the surface.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the product of APA by including adhesive in a powder located at the selective bond sites as taught by Magnin in order to reduce processing time for forming and article and to reduce the total amount of adhesive used.

With regard to claim 20, without a showing of unexpected results it would have been obvious to one of ordinary skill in the art at the time of invention to select any size microcomponent including microcomponents smaller than 1000 μ m.

4. Claims 1, 4, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA in view of Moeller et al. [DE3739333A1, newly cited, herein "Moeller"], Magnin et al. [US2004/0265504, of record, previously cited, herein "Magnin"] and Hefele [US4183978, newly cited].

APA found in the applicant's specification on page 1 recites, "microcomponents are conventionally glued using viscous adhesives," and that the microcomponents are glued to a substrate. APA is silent as to the adhesive being a pulverulent hotmelt adhesive as a dispersion applied through a contoured screen, so that only selected areas on the surface are coated with the adhesive.

Moeller discloses the method of joining a chip to a substrate. It is noted a machine translation of Moeller has been provided. The method comprises providing a wafer or substrate and thinly coating the substrate with a hotmelt adhesive, providing a chip onto the adhesive, and using a laser to melt the adhesive between the chip and substrate so that a bond is formed during the cooling of the hotmelt adhesive (paragraphs 0010-0019). The use of a hotmelt adhesive and the laser allow for better control over the adhesive temperature and cure time. Moeller is silent as to the adhesive being a pulverulent adhesive as a dispersion applied through a contoured screen to selective areas of the substrate.

Magnin discloses a method of bonding substrates using a powder adhesive. Magnin discloses the disadvantages of using liquid adhesives when compared to powder adhesives, such as the extra time and energy required to dry the liquid adhesive on the substrates (paragraph 0003). The method comprises providing two substrates to be bonded, providing a powder adhesive, depositing the powder onto one of the substrates, activating the adhesive with heat, contacting the substrates together with the adhesive there between, and curing the adhesive (paragraphs 0013-0023). Magnin

discloses the powder can be applied in a pattern on the surface, but is silent as to using a contoured screen to apply the powder.

Hefele discloses a method of applying a powder adhesive to a substrate. Hefele discloses a powder adhesive can be selectively applied only to desired areas using a screen printing method which requires the use of a contoured screen (column 2, lines 33-35; column 3, lines 41-64; column 5, lines 38-50). The use of the screen printing method allows for control of the areas of adhesive. Once the adhesive is applied through the screen printing method it is considered a dispersion, as the act of screen printing produces a state of the adhesive being dispersed over the surface of the substrate.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of APA by using a hot melt adhesive and laser as taught by Moeller in order to provide control over the adhesive temperature and cure time, and to modify the method of APA by using a powder adhesive applied in a pattern as taught by Magnin in order to reduce the time it takes to apply the adhesive to the substrate and to reduce the amount of adhesive used, and to modify the method of APA by applying the adhesive through a contoured screen by screen printing as taught by Hefele in order to control the specific locations of the adhesive.

With regard to claim 4, Moeller discloses the adhesive is heated by a laser.

With regard to claim 19, APA teaches bonding of microcomponents and suggests the use of hotmelt adhesive, Moeller teaches bonding microcomponents using hotmelt adhesive and Magnin teaches the adhesive is applied in a pattern.

With regard to claim 20, without a showing of unexpected results it would have been obvious to one of ordinary skill in the art at the time of invention to select any size microcomponent including microcomponents smaller than 1000µm.

5. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over APA, Moeller, Magnin, Hefele and further in view of Karem et al. [US6099679, of record, previously cited, herein "Karem"].

APA as modified discloses a method of joining a microcomponent to a substrate. Applicant is referred to paragraph 4 for a detailed discussion of APA as modified. APA is silent as to preheating the surface to which the adhesive is applied, and afterheating the microcomponent after the adhering takes place using a focused or global heat source.

Karem discloses a method of powder coating. The method comprises providing a substrate and a pulverulent adhesive, pre-heating the substrate, applying the powder adhesive to the substrate, and heating the powder to a temperature to ensure the powder sticks to the substrate (column 2, lines 1-59). Karem discloses the afterheating can take place using a focusable infrared radiation source or a global hot-air source.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method APA by preheating the substrate as taught by Karem in order to ensure the powder material sticks to the substrate when the powder is first applied, and afterheating the microcomponent as taught by Karem in order to ensure the component is joined to the substrate by the adhesive.

Response to Arguments

6. Applicant's arguments with respect to claims 1, 4, 14-16, 19 and 20 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues the previous interpretation of "microcomponet" was an error. The applicant's definition provided as a hi-fi component of small size does not agree with the description of microcomponet in the applicant's specification, which describes a microcomponet as being "electronic, electromechanical or purely mechanical." If the microcomponet is purely mechanical it cannot be a hi-fi component. The applicant's provided definition is not accepted as the meaning of microcomponet used in the invention. In any event the interpretation of "microcomponet" is moot as the APA is relied upon in the rejection which discloses the bonding of a microcomponet.

Applicant argues the previous interpretation of "dispersion" is not understood. Applicant provided a definition of dispersion as a system of dispersed particles suspended in a solid, liquid or gas. Applicant's invention does not require a system of dispersed particles suspended in a solid, liquid or gas. The claim requires a "dispersion" not a "disperse system" as used in definition 5 of the applicant's provided definition. Furthermore the applicant's specification does not disclose or suggest suspending particles in a solid, liquid or gas. Definition 1 in the provided definition discloses dispersal as an act, state or instance of dispersing or being dispersed. According to this definition, the act of screen printing the powder will cause the powder to be dispersed forming a dispersion. This definition is supported by the applicant's specification, in describing Figure 8, the specification recites the adhesive "applied in

the form of a dispersion, by means of screen printing...". Newly cited Hefele discloses powder adhesive can be applied by means of screen printing, in which case the adhesive is applied in the form of a dispersion.

In the new grounds of rejection, newly cited Moeller discloses using a hotmelt adhesive, newly cited Hefele discloses applying the adhesive by screen printing the adhesive in the form of a dispersion which requires using a contoured screen, APA discloses joining a microcomponet to a substrate, and Moeller discloses joining the parts during the cooling of the hot melt adhesive.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL MCNALLY whose telephone number is (571)272-2685. The examiner can normally be reached on Monday - Friday 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel McNally/
Examiner, Art Unit 1791

/John L. Goff/
Primary Examiner, Art Unit 1791

DPM

June 25, 2009